



Healthcare Analytics in Navy Medicine

Perspectives and Methods for Decision-Making

FOCUS ON HEALTHCARE REIMBURSEMENT STRATEGIES

Defense Health Program Funding Adjustment Models

Robert Opsut, PhD

How does one determine the funding levels for direct care facilities within the MHS? Prior to 2005, funding was determined the way most government organizations are currently funded: given a historical baseline, the following year's funding was simply the previous year's funding plus inflation. Performance had no effect on the budget. In 2004, the Prospective Payment System (PPS) was initiated for the Defense Health Program (DHP). For the first time, DHP budgets were to be adjusted based on performance.

But how to measure performance? At the time, the major concern about performance was the decline in the amount of work being done in MTFs. So, the PPS concept was simple: budgets would be tied to workload. Increases in workload would result in increases in budget; decreases in workload would lead to decreases in budget. Workload would be measured in Relative Weighted Products (RWPs) for inpatient care and in Relative Value Units (RVUs) for outpatient care. Both RWPs and RVUs would be valued at the rates that the MHS paid for that same workload in the private sector. The result over time was that the decline in MTF workload diminished, and in some cases, workload started to increase. Success!!! Or was it?

Is workload the right measure of performance in health care? The answer depends on what is meant by "value" in health care. The determination of value is tied to three perspectives: How much? How well? At what cost? For example, in terms of value, "how much?"

does not necessarily equate to workload counts of RVUs and RWPs. Instead, "how much?" might indicate the number of episodes of care treated or the size of the population being managed. "How well?" can be measured from a patient point of view (e.g., satisfaction), a clinical point of view (e.g., outcomes), a system point of view (e.g., access), or from an economic point of view (e.g., productivity and effectiveness). Today, several efforts are taking place to explore changing PPS from a system that only measures workload to one that measures value in a more holistic way.

Several years ago, PPS itself was augmented by an adjustment called Pay for Performance (P4P) that measured adherence to HEDIS standards, primarily in regards to prevention. If funding was available at mid-year, some of that funding was distributed based on how well the MTFs were doing on prevention measures like mammography rates or diabetes screening rates. Better performance in these areas resulted in an add-on to the PPS adjustment. As a result of P4P, the current funding system addresses "how much?" by measuring workload and addresses "how well?" by measuring selective HEDIS metrics.

In 2010, a program called the Performance Planning Pilots was started. For seven sites across the three Services, payment mechanisms were developed to more closely align to the Quadruple Aim – Readiness, Experience of Care, Population Health, and Per Capita Cost. The idea was that the Quadruple Aim set the framework for answering the question of value in the MHS (i.e. the notions of "how well?" and "how much?"). In the Performance Planning Pilots, each of the Services

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has established a set of measures for adjusting their pilot site budgets to incentivize the Quadruple Aim. In addition, there is an agreed upon common set of measures that will be used to evaluate whether those incentives actually result in an improvement in the Quadruple Aim. While the Army and the Air Force took an incremental approach, expanding on their previous systems of augmenting PPS with quality measures, the Navy took a distinctly different approach by introducing the concept of primary care sub-capitation and measuring directly, and creating incentives for, per capita costs.

The Navy budget adjustment under the Performance Planning Pilot initiative answers “how much?” in three ways: a care management fee, primary care sub-capitation, and fee-for-service for other health care. First, there is a care management fee for each Prime enrollee. It places a monetary value on managing a population regardless of how much face-to-face care is provided, and the fee recognizes that this management comes with some activities that are not captured in RVUs or RWPs. Second, rather than valuing each visit or procedure within primary care, the primary care sub-capitation rate places a prospective value on primary care that is based on the demographics of the enrollee. The MTF can then manage primary care in a way that is best for the patient, rather than on what generates the most RVUs. With Medical Home Ports being implemented in the Navy, this means that more care can be done with secure messaging and with technicians or nurse visits without losing credit for the RVUs. However, if these enrollees are seen in private sector care for some of their primary care, decrements are made from the sub-capitation rate. Finally, inpatient care, specialty care or primary care among beneficiaries not enrolled to that MTF will still be valued based on fee-for-service rates (RWPs and RVUs).

To answer “how well?”, the Navy is using HEDIS measures, access and continuity measures, and patient satisfaction, as well as adjustments for Emergency Room (ER) utilization and the overall per capita costs. In the case of the ER utilization and the per capita costs, the sites will either share in the savings if they perform below a target level, or they will see a funding reduction if they see increases above the target.

Performance Planning Pilot programs will be assessed using the common Quadruple Aim measures over the next two years, with lessons learned from each of the three Services. Then, the Services will adjust their funding mechanisms to all MTFs with much more information on how different incentive programs can influence performance.

One final note: the funding experiments conducted within the MHS are also being explored in the civilian sector. The Center for Medicare and Medicaid Services (CMS), as well as private insurers, are experimenting with new and novel approaches to health care financing that emphasize the overall value of the health care provided rather than just reimbursing based on the number of procedures being done. If successful, there may come a time in the near future where American and Military health care can be affordable to the nation while meeting the health care needs of beneficiaries.

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SKILLS AND METHODS

– UNDERSTANDING INPATIENT AND OUTPATIENT PROSPECTIVE PAYMENT

Prospective payment systems (PPS) are intended to encourage greater effectiveness and efficiency without causing overutilization of services through the use of relatively fixed payments set in advance for specific types of services. This article describes how PPS is applied in both the inpatient and outpatient care sectors of the MHS.

The first widely adopted PPS mechanisms were health maintenance organizations (HMOs), which began to appear in the 1960’s and which set capitation rates for various groups or classes of beneficiaries for a comprehensive array of services for a specified time period. In a sense, HMOs remain the archetype of PPS methods, in that the HMO concept addresses in one fell swoop almost all health care services that individuals need, thus offering great flexibility for how various services might be used in combination to achieve and maintain posi-

tive health outcomes at relatively low costs. The central concept of the HMO movement was the idea that health care organizations and providers should be given financial incentives for making and keeping beneficiaries healthy, rather than for simply treating diseases and illnesses as they occur.

For a variety of reasons, the early implementation of the HMO concept experienced mixed results and was not readily accepted by providers and patients. HMOs and managed-care in general were even vilified in the popular media, and in professional circles it soon was recognized that capitation payments to health care organizations alone would not secure the promise of healthier populations and reasonable costs. Thus, both in conjunction with capitated or fee-for-service delivery of care, PPS systems have increasingly focused on payments to institutional and individual providers for services to individual patients.

Inpatient PPS

The major PPS system that governs payment to acute-care hospitals is diagnosis-related groups (DRGs). This payment system was pioneered by Medicare in the 1970s and has gone through many changes. It has been adopted by many other payers, including the MHS, for use in both purchased and direct care. Today's DRG-based payments to hospitals fall into 535 groups based on diagnoses, age, and sex, with some variations for lengths of stay that vary greatly from the norm. Under Medicare there are separate PPS payment systems for rehabilitation facilities, psychiatric facilities, long-term hospitals, skilled nursing facilities, hospices, and home health agencies.

TRICARE, in the purchased care arena, has adopted and adapted several of these same inpatient PPS systems (DRGs, Skilled Nursing Facilities, and Home Health) for its own use with good results. The implementation by TRICARE (then CHAMPUS) of the DRG payment system in the 1990s had the dramatic effect of actually producing the first year-over-year decrease in CHAMPUS payments since the program's inception. In the direct-care system, DRGs converted to relative weighted products (RWPs) have been an integral part of the MHS direct-care PPS system for several years.

Outpatient PPS

For outpatient care provided by individual providers, any fee schedule that allows a fixed fee-per-service that is set in advance exhibits some characteristics of a PPS system, in that it is a prospective payment mechanism and provides an incentive for providers to provide the specified service in an economical manner. There are many such systems, usually based on relative value units (RVUs), defined by procedure codes. Chief among these is the Medicare (now CMS) fee schedule, which in large part has been adopted by TRICARE for purchased-care services and adapted by the MHS for use in its direct care PPS system.

For hospital-based outpatient services, Medicare implemented the **outpatient prospective payment system (OPPS)** about ten years ago, which put most emergency-room and outpatient-clinic services on a fee schedule based on ambulatory payment classifications (APCs—analogue to DRGs for inpatient care), rather than continuing to pay for these services based on billed charges. TRICARE implemented a virtually identical system for purchased care in May of 2009. Just as in the case of the DRG implementation, OPPS resulted in dramatic decreases in payments under TRICARE for this type of care and also flattened the growth curve for hospital-based outpatient care in general.

PPS Challenge in General

The difficulty that arises with almost all PPS systems, especially when the related fee schedules are set at low levels and allow for minimal increases over time, is that they also provide an incentive for providers to cut corners and/or encourage overutilization of services (e.g., "Come back and see me next week.") Therefore, such systems, to be effective, need to be overlaid with utilization-management and quality-assurance programs to avoid abuses. These considerations have spurred the evolution of various **pay-for-performance (P4P)** initiatives in recent years that reward providers for meeting quality standards while providing services under payment systems intended to control costs. There is also a growing belief that increased attention to quality, in and of itself, holds the promise of moderating cost growth, as quality care produces better outcomes and better health, with fewer haphazard interventions. In a sense, this P4P evolution hearkens back to the original HMO promise,

that increased attention to promoting good health will, in the long term, lead to lower costs.

PPS Challenge for Direct Care

The main challenge for developing an effective PPS system or combination of systems for the direct care system of military hospitals and clinics is that our individual providers generally are insulated from the incentives associated with prospective payment for services. They do not provide services on a fee-for-service basis, nor do they share directly in financial gains or losses associated with the economics of health care delivery. Nonetheless, to a very great extent, their interactions with individual patients not only govern the quality of care provided, but also control the vast majority of health care expenditures. On the other hand, most of our providers chose a career in the Navy because they want to serve their patients and their country without having to be concerned about their own financial bottom line. This does not mean, however, that they are insensitive to the value of working in a way that promotes quality while containing costs and allowing for more patients to be served within budgetary constraints. As good leaders and communicators, our commanders can tap into these higher-level motivations. Under these circumstances, PPS and P4P hold as much or more promise for improving the delivery of health care in the MHS as in the civilian community.

DATA AND INFORMATION SYSTEMS

– *RELATIVE VALUE UNITS (RVUS) IN THE CAPER*

Relative Value Units (RVUs) are important because they allow users to estimate the value of workload produced. Most users access RVU information from the professional encounter records available in M2. There have been many changes in RVU calculations over the years in M2, but none as significant as the changes that occurred in 2012.

First, the MHS switched formats for direct care encounter data. Prior to 2012, most users would retrieve direct care RVU information from the Standard Ambulatory Data Record (SADR). However, in 2012, a new file with RVUs was implemented: the Comprehensive Professional Encounter Record (CAPER). The CAPER

and SADR are derived from the same source, the Ambulatory Data Module of CHCS, but there are some minor differences in the data fields available, and the edits performed on the records prior to submission to TMA.

Some of the new information in the CAPER, but not in the SADR, allowed for major improvements in RVU assignments. For example, in the SADR, providers and procedures were listed for each encounter, but there was no linkage to indicate which provider performed which procedure. That information is now available in the CAPER, allowing for better understanding of an individual provider's contribution to workload. The CAPER also includes additional diagnosis and procedure codes, as well as more detailed information about all of the providers who participate in the care. Taking advantage of some of the new data in the CAPER, TMA introduced a new RVU data element, which will be used for business planning and for Health Affairs' Prospective Payment System in FY2012. This new element, provider aggregate RVU, most closely reflects the way that RVUs would have been assigned for payment had the case occurred in a civilian setting. Unfortunately, a provider aggregate RVU is not available in the non-institutional TEDs, so that the new provider aggregate RVU can only be used with direct care data. Work has yet to begin on adding a similar construct on the TEDs. Continue to use enhanced RVUs when comparing direct and purchased care RVUs.

The differences in provider aggregate RVUs in the CAPER and SADR RVUs are:

- **CAPER records “cleaned” prior to RVU assignment:** New edit flags were added to the MDR so that the types of edits made could be analyzed. Examples include “disallowed credit for E&M code on the same day as a procedure”, or “unit of service limit exceeded”. Some of the cleaning did occur in the SADR enhanced RVUs (i.e. unit of service limits), but much of it is new. These edits did not result in changes in record counts, only in RVU assignment.
- **CPT/HCPCS modifier impacts:** Only laboratory and radiology modifiers were incorporated into the SADR RVU logic previously, but in the CAPER, many additional modifiers are considered. For example, procedures that are modified to indicate bilateral procedures

will get 150% of the RVU credit for the procedure (unless the procedure is already defined to be a pure bilateral procedure). Likewise, modifiers indicating a reduced service would get 50% credit. Some of the modifiers increase the RVU while others decrease them.

- **Discounting:** Discounting occurs in payment when more than one procedure is done in the same encounter, and the highest weighted procedure is given 100% RVU credit while the others get 50%. CMS publishes a flag variable to indicate whether or not procedures should be discounted (<http://www.cms.gov/PhysicianFeeSched/PFSRVF/list.asp#TopOfPage>). Based on this flag variable, provider aggregate RVUs in the CAPER are discounted. No discounting is applied in the enhanced RVUs.
- **Treatment of ‘nurse-only’ workload:** Enhanced RVUs have always been calculated for all types of providers – even nurse-only care; however, PPS did not credit encounters where only a nurse was on the record. In the new provider aggregate RVU data element, there are some procedures that receive credit even when the nurse is the only provider. An example of this is a flu shot.
- **Provider adjustments:** For payment purposes, not all providers are paid equally. Independent providers such as physicians and physician extenders like nurse practitioners receive full RVU credit while other less-credentialed providers receive less. In enhanced RVUs, regardless of the number or type of providers involved, 100% credit was given only once. In other words, a surgical procedure that required two physicians would have only gotten credit as if there were one physician, and a service provided by a nurse would have received the same credit as if the service had been provided by a physician. With the provider aggregate RVU in the CAPER, the provider to procedure linkages are utilized to determine which providers participated in which procedures, and then, credit is given according to the specialty of the providers. Conversely, in the SADR, only the first-listed provider was assumed to have performed every procedure.
- **Practice Expense (PE) RVUs:** For enhanced RVUs, whether to use facility or non-facility practice expense

RVUs and whether ambulatory payment classification (APC) credit was given was based entirely upon the MEPRS Code on the record. Most cases receive the non-facility PE. But cases recorded as ambulatory procedures or in ERs always received the facility PE in the enhanced RVUs. In the provider aggregate RVU data element in the CAPER, some additional procedures also receive facility PE and APC credit regardless of setting (these include: radiation oncology, cardiac catheterizations, and selected GI procedures).

NEW KNOWLEDGE

– NOTED PUBLICATIONS

Two peer-reviewed publications are noted below because they consider healthcare policy reform in the context of payment initiatives that both reduce healthcare costs and improve performance.

Payment reform options: episode payment is a good place to start

Mechanic RE and Altman SH.

Health Affairs. 2009 Mar-Apr;28(2):w262-71.

Epub 2009 Jan 27

In this article, authors discuss four commonly-cited payment policy options:

- Recalibrating fee-for-service (FFS)
- Instituting pay-for-performance (P4P)
- Creating episode payments that combine hospital and physician reimbursement
- Adopting global payment approaches such as capitation.

Each option is briefly summarized and evaluated according to four criteria:

- Their potential for reducing unnecessary utilization
- Their potential for encouraging high-quality care
- The support they provide for provider integration
- Operational feasibility.

The authors also explain various blended approaches, which are widely used to achieve specific policy objectives—for example, combining capitation incentives for spending within budget targets with FFS for promoting

preventive services such as mammography, and bonus payments for encouraging providers to meet quality and patient satisfaction targets. Implementation issues and challenges for these payment reform options are also discussed.

The authors state payment reform cannot succeed without Medicare as a major player because Medicare is the only payer with sufficient market power to drive meaningful delivery system reforms. The authors argue that payment reform must also be accompanied by new investments in quality measurement, comparative and cost-effectiveness research, IT, and techniques for managing complex chronic illnesses. Without such investments, they conclude, the U.S. health system will be unable to moderate spending growth while moving toward a delivery system that generates superior value.

Read more about this publication at <http://content.healthaffairs.org/content/28/2/w262.long>.

Developing innovative payment approaches: finding the path to high performance

Guterman S and Drake H.

The Commonwealth Fund. Issue Brief Volume 87, 2010 May.

This article discusses new payment initiatives created under the Patient Protection and Affordable Care Act of 2010, which will be developed and evaluated by The Center for Medicare and Medicaid Innovation. This paper discusses how the development, implementation, and evaluation of new approaches to paying for care can be improved, and how those improvements can help achieve the broader goals of health reform. The paper focuses largely on new payment initiatives to be conducted by Medicare, but also considers the potential for enhancing the impact of Medicare payment innovations through multi-payer collaborations involving other public programs, such as Medicaid and the Children's Health Insurance Program (CHIP), as well as private insurers and purchasers of care.

Read more about this publication at <http://www.commonwealthfund.org/Publications/Issue-Briefs/2010/Jun/Developing-Innovative-Payment-Approaches.aspx>.

WHAT'S COMING UP

Clinical Data Mart Retention Project

When the Clinical Data Mart (CDM) was shut down in the summer of 2011, users were left with no means of accessing clinical data from the Clinical Data Repository (CDR). Almost immediately after the shutdown of the CDM, an MHS Data Repository (MDR) initiative was undertaken to clean up data flowing from the CDR to the CDM, and to make these data routinely available to authorized MDR users. This CDM Retention Project is nearly complete. Files that have been added to the MDR include: patient file, vital signs, lab chemistry orders and results, medications, immunizations and historical procedures. Files still in development include: microbiology, pathology and radiology. Recently added files are available from FY2009 forward and are updated approximately weekly.

Defense Connect Online (DCO) Training Opportunities

BUMED PA&E is sponsoring a series of three DCO sessions on the topic of “**Healthcare Industry Financing**”. Each of the three webinars will be conducted twice—once in the early morning, and once in the late afternoon—on dates as shown below:

	CONUS 0800 EST	OCONUS 1600 EST
Health Insurance Payers:	Sep 25, 2012	Sep 27, 2012
Provider Payment Mechanisms:	Oct 23, 2012	Oct 25, 2012
Health Care Rate-Setting:	Nov 16, 2012	Nov 18, 2012

Members of the group email lists “Healthcare Analytics Community” or “Healthcare Analytics Publication” will receive additional specifics as they become available. To become a member of either or both lists, please send a request to robert.willis@med.navy.mil.

TIPS AND TRICKS

– LINKING DATA CUBES IN M2

Often, an M2 analyst retrieves rows of data in a data cube from one class, but wants a table displayed that combines that information with additional information retrieved in a different data cube by a separate query. This technique requires that both queries be built in the **same** M2 file, such as by using the “Insert a new table” icon. (See illustration/exercise on next page.)

LINKING DATA CUBES – EXAMPLE

Illustration/Exercise:

The following example uses a query built to retrieve the primary care claims data for prime enrollees in the MTF Service Area for a given calendar year. The report lists the various procedures (CPT codes) in descending order by total government paid, but it is “unfriendly” since that class of data has no description of what the procedures are. A second query is created (on a new or the same tab of the M2 file) that retrieves the short descriptions of the procedure codes from the CPT/HCPCS class of M2. In order to add procedure descriptions to the claims data report, the two data cubes are linked using the following three steps:


1. The common dimension must be linked between the two data cubes. The Data Manager icon  is used to open the first query. Select “Procedure Code”, and on the Definition tab, click on the “Link to” button (Figure 1). Then, when the new window opens, click on the CPT/HCPCS dimension of the second query. **The dimension to be linked must be the one that the new information is about.**
2. Create a local variable (“CPT Description”) for the information to be shared between the data cubes. Select Data/Variable/Add from the main menu bar, and name the new variable, classifying it as a “Detail” type and associating it with the CPT/HCPCS dimension of the data cube it came from (Figure 2). Next, on the “Formula” tab, simply double click the description object, “Description, Short”. (Figure 3).

Figure 1. Data Manager view

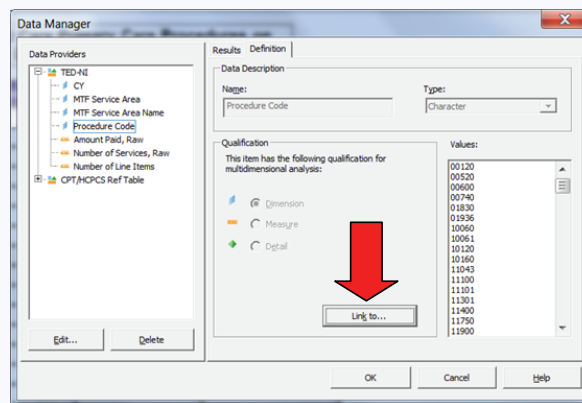


Figure 2. Variable Editor view – “Definition” tab

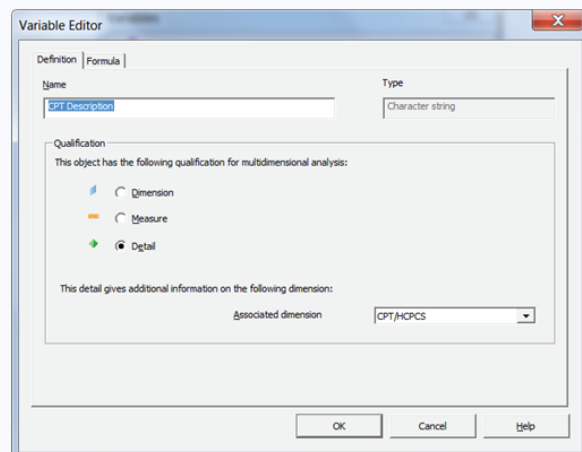
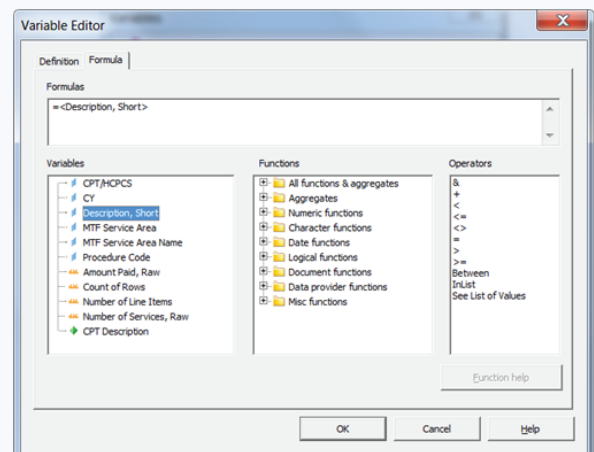


Figure 3. Variable Editor view – “Formula” tab



LINKING DATA CUBES – EXAMPLE

- Finally, use slice-and-dice to drag the new local variable either into the existing table, or create a new table that includes it. (*Note: the table with the local variable must also have one of the linked dimensions that it was associated with when it was built*).

The top of a table built this way is shown (Figure 4). A corporate document built for this illustration can be retrieved from the BOXI repository in the Navy folder and is named **Navy.BUMED.M81.Purch-Primary-Care.rep**.

Figure 4. Example final table using linked data cubes

Purchased Care Primary Care Procedures on Enrollees, Listed in Order of Aggregate Cost		FOR 2012	FOR 0035	NBHC GROTON
Procedure Code	CPT Description	Amount Paid	Number of Services	Number of Line Items
99213	OFFICE/OUTPATIENT VISIT, EST	\$62,634	1,238	1,238
99214	OFFICE/OUTPATIENT VISIT, EST	\$51,200	734	734
99472	SUBSEQ INPAT PED CRIT 29D-24MO	\$37,761	93	93
97110	THER PX,1+,EA 15 MN;THER EXERC	\$32,825	1,382	793
97140	MAN THER TECH,1/+ REG,EA 15MIN	\$17,156	764	595
97530	THERAPEUTIC ACTIVITIES	\$13,711	516	413
99203	OF/OTH OP VST,NEW:DETAIL,30MIN	\$12,708	278	278
99244	OFFICE CONSULTATION	\$9,780	56	56

Finally, a list of caveats about using this technique:

- There can only be one detail value for any value of its associated dimension. In this case, both data cubes were conditioned to be the same **calendar** year, since the exact meaning of CPT codes can change each January.
- If the second query's data cube includes some dimension values that were not in the first data cube, they will show in the combined table as rows with blanks for all of the objects from the first data cube. One option is to filter out the blanks in slice-and-dice, but when the query is refreshed and new values appear, the new values will not pass the filter and will not show up.
- It is good to limit the second data cube to only the values needed. Otherwise, the file can be huge. In this illustration, a condition was included in the second query to only take CPT codes that were results of the first query. This kept the cube small and also avoided the problem with blanks described above.
- Linking data cubes does not work if the new variable is not made a **detail** object. M2 does not allow dimension objects from different data cubes to be put into the same table.

KNOWLEDGE SOURCES

– PROFESSIONAL ORGANIZATIONS

The following organizations represent opportunities for professional growth, knowledge attainment, and networking in the field of healthcare economics and policy.

American Society of Health Economists (ASHEcon)

ASHEcon is a newly formed professional organization dedicated to promoting excellence in health economics research in the United States. ASHEcon is an affiliate of the International Health Economics Association. ASHEcon provides a forum for emerging ideas and empirical results of health economics research through biennial professional meetings and professional development initiatives.

ASHEcon's most recent conference was themed "Optimizing Health and Healthcare". Sample conference topics included the cost and impact of health reform, mental health economics, modeling health care costs and counts, the impact of physician referrals and self-referrals on health care utilization, cost-effectiveness analysis techniques, and variation in health care use. A full copy of the conference program can be found at <http://www.cce.umn.edu/Documents/CPE-Conferences/ASHEcon/ASHEcon-Final-Program.pdf>.

More information about ASHEcon and its information resources can be found at www.ashecon.org.

IN THE NEXT ISSUE...

The next issue of *Healthcare Analytics in Navy Medicine* will focus on identifying and quantifying potentially inappropriate healthcare delivered to Navy Medicine beneficiaries. Potential sources and causes of inappropriate utilization and the impact on outcomes, resource use, and operating costs will be discussed. The issue will also describe concepts of inappropriate care, discuss tools designed to help analyst identify potentially inappropriate utilization, and highlight emerging knowledge about this field of study.

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